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	First Named Inventor	Toshio FUJIWARA, et al
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Sir:

Attached please find the application papers of Toshio FUJIWARA, Yasushi FUKUNAGA, Kozo NAKAMURA, Ken'ichirou KURATA, Yasuhiro GUNJI, Yoshinori ENDO, Mariko OKUDE, covering new and useful improvements in INFORMATION DISPLAY SYSTEM FOR DISPLAYING SPECIFIED LOCATION WITH MAP THEREAROUND ON DISPLAY EQUIPMENT, comprising:

Specification, Twenty-Nine (29) Claims and Abstract of the Disclosure (67 pages)

English language, Combined Declaration and Power of Attorney (2 pages)

Eighteen (18) Sheets of Drawings Showing Figures 1-23

Letter Claiming the Right of Priority and Certified Copy of Japanese Patent Application No. 8-242904

Assignment and Recording of Assignment Letter

U.S. Government Filing Fee of \$1,270.00

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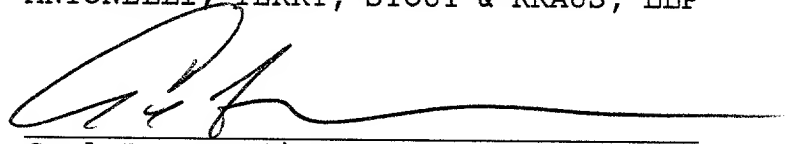
List and Copies of Prior Art References

08/926008-090997

Please charge any shortages in the fees or credit any overpayments thereof the deposit account of Antonelli, Terry, Stout & Kraus, LLP Account No. 01-2135 (503.35636X00).

Respectfully submitted,

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Attachments

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TITLE OF THE INVENTION

INFORMATION DISPLAY SYSTEM FOR DISPLAYING SPECIFIED
LOCATION WITH MAP THEREAROUND ON DISPLAY EQUIPMENT

5 BACKGROUND OF THE INVENTION

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The present invention relates to an information display system, especially relates to a navigation system providing a course guidance to a predetermined place by calculating a car's position and displaying the car's position with a map therearound on a display, said navigation system providing information for a user intelligibly by obtaining said information from a network like the internet from which various kinds of data are provided.

15 Navigation system shows a car's calculated position based on various sensor information on a display, with a map surrounding the car's position, by taking out map data stored in a CD-ROM, and by setting a goal position, and a course guidance to the goal position is shown on the display.

20 In the CD-ROM, various information necessary for a driving car, such as information about sightseeing spot or information of gas service station are inputted and indicated on the display according to a request of the user.

25 In this case, necessary information should be stored beforehand in the CD-ROM. As the CD-ROM is used only to be read out, it is not suitable for use as a medium to store

information changing with time, for example, a traffic jam information. Even if it is assumed that a rewritable memory is used temporarily, it is troublesome for the user to input the information.

5 In order to solve such problem in the conventional navigation system, as shown by Japanese Patent Laid-open Nos. 7-105492(1995), 7-261661(1995), 8-139193(1996), any communication equipment is provided in the car as a navigation equipment, and receives any facility data, so as
10 to provide the information which is not provided by CD-ROM.

 In order to communicate with a car, a means of mobile communication like a cellular telephone system needs to be used. However, data transmission speed of the cellular telephone system is slow, and further, when it is used by a
15 running car, the channel of the cellular telephone system is easy to run out, and it is not suitable for sending a large quantity of data. Furthermore, when a driver of the car wants to see the information during driving, the driver is averted from his driving depending on the information
20 display method, and it is dangerous for the driver. The information sent by a communication means should be capable to be accessed for convenience of the user, and a good acquisition method of the information is needed.

25 SUMMARY OF THE INVENTION

 Referring to the above stated problem, an object of the present invention is to provide a navigation system, by

which much information is capable to be accessed so as to suitably control the amount of the information to be communicated and the received information is capable to be displayed intelligibly.

5 An navigation system is constituted with an information display equipment indicating information received through a mobile communication system, information offering equipment which obtains the information by connecting to a network and transmits the obtained
10 information to the information display equipment, and a communication equipment.

 The information offering equipment comprises a connecting means to be connected to the network and a memory means to store the information sent to the
15 information display equipment, and obtains the information from information offering servers connected to a network and stores it in the memory means.

 The information offering equipment comprises a retrieval means to retrieve the information to be provided
20 to the user from the memory means furthermore, and a communication means to transmit and receive data with the information display equipment, thereby a kind of information demanded by the user from the information display equipment is received and the information retrieved
25 from the memory means is transmitted to the information display equipment. In order to suitably control the amount of the data to be transmitted with the communications

equipment, a data selection means and a data processing means are prepared at need.

The information display equipment comprises an input means to input a kind of the information that the user needs, and a communications means to transmit a retrieval key word input to the information offering equipment, or to receive the information provided from the information offering equipment. The information display equipment further comprises a map memory means to store map data, a map display means to retrieve the map data from the map memory means and to display the map on the display, and an icon display means to display an icon to a position where the information provided from the information offering equipment is stored, on the map displayed by the map display means. The information display equipment further comprises an icon select means by which a user selects the icon displayed on the display equipment, a retrieval means to retrieve the information about the selected icon from the information stored in a detailed information store means storing the information or the detailed information sent from the information offering equipment, and a detailed information display means to display the information retrieved to with the map on which an icon is displayed.

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BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 shows a constructive view of the navigation

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equipment to realize the present invention.

Figure 2 shows a constructive view of the information display equipment to realize the present invention.

Figure 3 shows a constructive view of the information display equipment to realize the present invention.

Figure 4 shows a view of hardware construction of the arithmetic processing department to realize the information display equipment.

Figure 5 shows a functional construction figure of the arithmetic processing department to realize the information display equipment.

Figure 6 shows a function construction figure of the arithmetic processing department to realize the information display equipment.

Figure 7 shows a function construction figure of the arithmetic processing department to realize the information offering equipment.

Figure 8 shows a view which shows the retrieve screen.

Figure 9 shows a view which retrieves by using a phone number.

Figure 10 shows a view which sets an item retrieved with precedence.

Figure 11 shows a view which displays a retrieval range.

Figure 12 shows a view which shows the range retrieved with an acquisition time.

Figure 13 shows a view which shows a retrieval range

Figure 14 shows a view which shows an example of a fixed form format.

Figure 16 shows a view which displays an icon contained by the information.

10 Figure 18 shows a view which shows location of the
information with an icon on the map top.

Figure 20 shows a view which displays detailed
15 information of an icon selected.

Figure 22 shows a view which shows that detailed information are divided to be displayed into several pages.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

The information provided to the user is sent from an information offering server through a network to information offering equipment, and the information that has been sent is stored in a memory equipment so as to be

provided according to request of the user. When the user requests to be offered the information, the information is retrieved from this memory equipment by a retrieval condition of the user, and is transmitted to the information display equipment.

In the information offering equipment, data which should be transmitted to the information display equipment are selected and processed furthermore. The information requested by the user and transmitted to the information display equipment from the information offering equipment is displayed with an icon to the position on the map where the information is stored. When one of the icon displayed by operation of the user is selected, the detailed information which relates to the icon is displayed.

Referring to following figures, one embodiment of a navigation system having information offering equipment in this invention will be explained.

A navigation system in this embodiment as shown in Fig. 1 has information offering equipment 2 to obtain various information from an information offering server 3 connected through a network 4 such as the internet, and to provide it to a user, and an information display equipment 1 to display a car's position, to provide course guidance to the car, and to provide a presentation of the information from the information offering equipment 2 etc. according to the request of the user.

The information display equipment 1 will be explained

using Fig. 2.

The information display equipment 1 has an arithmetic processing department 10, a display unit 11, a map memory 12, an internal information memory 13, a voice input and output unit 14, an input unit 15, a wheel speed sensor 16, a magnetic compass 17, a rate gyro 18, a GPS receiver 19, an icon image memory 20 and a display side communication equipment 21.

The arithmetic processing department 10 has a means to calculate a current position of a moving body like the car in which the navigation equipment is installed by using the information output from the above sensor 16,17,18 and the GPS receiver 19, and a means to select a most suitable road which connects current position with a goal position directed by the user and to notify them by using a sound and graphic display to the user.

The arithmetic processing department 10 sets a display domain according to the calculated current position of the moving body or scroll operation by the user, reads out the map data corresponding to the display domain from the map memory 12, provides graphic information from the map data which are read out, and performs a graphical processing so as to display it on the display unit 11. When the current position is displayed, the current position of the moving body is displayed by a mark with a graphics information corresponding to the map showing the neighborhood of the current position.

moving body when the moving body turns.

The GPS receiver 19 receives a signaling from GPS satellites and calculates a current position, a moving angle and a moving direction of the moving body by measuring distance and between the moving body and satellite and a change rate of the distance relating to three or more satellites. These sensors and equipment as above are used in order to detect the current position of moving body by a navigation processing.

The icon image memory 20 stores images of icons which is used when the information got from the information offering equipment 2 is displayed on the map.

Said internal information memory 13 memorizes various kinds of information to offer to the user, and most of the information is static information which are updated with a low frequency, for example, information of a sightseeing spot, information of a gas station, guide information of the accommodations or leisure facility, and tariff information of a toll road . Here, the navigation system in the present invention has a function to offer the information depended on a map fundamentally in addition to above and there is location on a map equivalent a lot of said information to be offered. In other words, most of them are individual information that have location information which respectively correspond with the locations on the map, and the individual information is offered by appointing the location on the map, and the

related according to the necessity.

In this embodiment of the present invention, the memory is sorted into the map memory, the internal information memory, and the icon image memory according to the kind of the information to be stored, however, it is possible to store plural kinds of the information with one memory.

In addition to above, in this embodiment of the present invention, the memory consists of the map memory, the internal information memory, and the icon image memory according to a kind of the information to be stored, however one of the memories may store several kinds of the information.

For example, as shown in figure 4 as a hardware construction, the arithmetic processing department 10 is comprised of a central processing unit 31 to control the calculation and each device, a random access memory 32 to store the map data and calculation data temporarily, a read only memory 33 to store the system program, a DMA 34 to execute each data transfer between one memory and other memory at high speed and between the memory and each device, a display controller 35 to execute and indicate graphics information generation as to develop vector data in an image at high speed, a VRAM 36 to save graphics image data, a color pallet 37 to convert the image data into Red Green Blue codes, an analog-to-digital converter 38 to convert an analog signal into a digital signal, a SCI 39

to convert a serial signal into a parallel signal, a programmable input-output chip 40 to synchronize with the parallel signal and so as to output on the bus 30, a counter 41 to count pulse signal, and said bus 30 to
5 connect between every devices.

Construction of the arithmetic processing department 10 will be explained using figure 5, and figure 6.

As shown in figure 5, the arithmetic processing department 10 is comprised of a user operation analysis
10 means 50, a path account means 51, a course guidance means 52, a present position arithmetic means 55, a map match processing means 56, and a menu display means 58, as a means mainly relating to a navigation processing such as car's position calculation and course guidance.

15 The present position arithmetic means 55 respectively integrates distance pulse data measured with the wheel speed sensor 16 and angular acceleration data measured with the gyro 18, and calculates a position (X', Y') of the moving body moved from an initial position (X, Y) by
20 integrating the distance data and the angle data during one fixed cycle time obtained by the above calculation. Furthermore, in order to set an initial value of advance direction of the moving body, a relationship of an angle data provided from the gyro 18 and an absolute direction is
25 set by using the directional data provided from the magnetic compass 17.

Furthermore, the present position arithmetic means 55

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outputs current position information after having revised the sensor data with the position data provided from the GPS receiver 19 by a predetermined cycle time, thereby a sensor error to be accumulated is canceled by integrating the data provided from the sensor as stated the above.

Generally speaking, in the present position information provided in this way, error of the sensor may be still contained. On this account in order to raise position accuracy furthermore, a next map match attention is performed by the map match processing means 56.

The map match processing compares a road data contained in the map around the current position read in by a data read-in means 57 with a traveling trace obtained from the current position arithmetic means 55, thereby the current position is processed to match to the road where the mutual shape relation becomes highest . By applying this map match processing in most case, the current position comes to correspond with the traveling road and the present position information may be output accurately.

The user operation analysis means 50 receives various operations requested from the user with the input unit 15, and controls the each unit contained in the arithmetic processing department 10 so as to execute the processing corresponding to the request of the user.

For example, when the user requests the course guidance to the goal position, a processing to operate a path from the current goal position to the goal position

As shown in figure 6, the arithmetic processing department 10 comprises a retrieval range setting means 60, a received data analysis means 61, an icon setting means 62, an icon display position setting means 63 and an icon display means 64 furthermore, as a processing means in a navigation system to optimize amount of the information to be communicated and to display the information received intelligibly in this invention.

The retrieval range setting means 60 sets one or more items selected by the user from items shown by the menu display means 58 as a retrieve object property, and sets a specification spot on the map provided from the scroll information as a center of the retrieve neighborhood, said scroll information relating to the present position of the moving body output from the map match processing means 56, the goal position of the moving body input through the user operation analysis means 50 or the direction of the scroll corresponding to the scroll operation input through the user operation analysis means 50, and set a size of the retrieve neighborhood in a value decided beforehand furthermore. The retrieve object property, the center of the retrieve neighborhood and the size of the center set in this way are sent to the information offering equipment 2 by using the display side communication equipment 21. An example to set the information which is retrieved by the user on the menu screen by using figure 8.

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The center of retrieve neighborhood which is set may

be set by using the information specifying a spot, elsewhere it is set from a position on the map. For example, phone number and a position of the information or an address stored in the internal information memory 13 are
5 used. Input of the addresses is performed by using a letter input means, a place name select means chosen from a place name list, or a sound recognition means. An example of a method to set the center of the retrieve neighborhood by inputting the phone number will be shown in figure 9.

10 The retrieve neighborhood that is set may be set based on the domain and the contraction scale of the map displayed on display unit 11. For example, when the user is going to obtain the information, the map domain displayed by the display unit 11 may be used as the retrieve
15 neighborhood.

In the above embodiment of the present invention, the size of the retrieve neighborhood is set by the information display equipment, however it may be set by the information offering equipment. For example, referring to
20 amount of the information sent to the information display equipment, it may be determined to be a range near to the center of the retrieve neighborhood. Further by providing a means to set intention by the user, suitable amount of the information may be set according to the user's intention.

25 In configuration of the above embodiment, area size of retrieval neighborhood is set with the information display, however, it is possible to set it with the

information offering device. For example, considering amount of the information to send to the information display, the area size is set so that suitable amount of the information is obtained by selecting area sequentially
5 near to the center of retrieval neighborhood. Furthermore, by providing a means for setting taste of the user, it may be set so that the amount of the information becomes suitable sequentially selecting the tasted information.

In the above embodiment, the retrieval range that the
10 retrieval entry means 60 sets, in other words, the key word for retrieving, is retrieval object property, center of the retrieval neighborhood, or size of retrieval neighborhood, however, as it becomes a premise that it is on business or it may be utilized when information is
15 demanded for the user, business hour information and vacant information may be automatically selected as the search conditions. When such search conditions are used, the information provided by the retrieval becomes to include the dynamic information that is changed with the time. For
20 example, when it is applied to the retrieval of a service station, as the service station in business becomes retrieval object at retrieval point in time, it becomes possible to understand whether it is on business or not before going there actually, it becomes good beneficial
25 information for the user. Of course, as unnecessary information is not communicated, the communication line capacity may be reduced. When hotel and ferry information

are searched in the same way, date to utilize may be set, thereby search condition as that there is vacant on the date is automatically set. Furthermore, information of the car which the user uses or taste information of the user
 5 may be set as the search condition. For example, when ferry and parking lot information are searched, size information of the car may be stored to be set. When restaurant and service station information are searched, credit card information that the user may utilize and chain store
 10 information that the user utilizes willingly may be set. In these cases, smooth information offering becomes possible for the user, reduction of communication line capacity becomes possible simultaneously, too. Of course, retrieval information described as above may be combined. These
 15 information are set by providing the setting means whenever the information is going to be obtained from the information offering device 2, however, they may be set automatically by preparing the means which will be registered itself with beforehand. An example to set the
 20 taste of the user is shown in Fig. 10.

A retrieval range display means may be prepared in order to show the retrieve neighborhood set as the above, and By displaying the retrieve neighborhood, it becomes possible to easily recognize the range of the map on which
 25 the information to obtain belongs. In figure 11, when the goal position neighborhood is the retrieve neighborhood, an example that displays the retrieve neighborhood with a

circle is shown. In addition to above, a triangle mark in figure 11 shows the present position, and a flag mark shows the goal position, and they are shown in the same way in the following figures.

5 When the information obtained at the past is provided, if a temporary memory means to store it and the retrieval range displaying means to display the retrieve neighborhood of the information stored are prepared, the amount of the communication with the information offering equipment may
10 be reduced, as the information is judged to be in the information display equipment even if the information offering equipment isn't accessed.

 When the Information which received at the past is displayed, a time when receiving said information in said
15 temporary memory means is displayed with retrieve area by the retrieval range display means, whether said information should be obtained from said information offering equipment may be referred. An example of a case that the retrieve area of information received at the past is displayed with
20 the time when received it is shown in Fig. 12. If the information stored in said temporary memory means in addition to above is constructed to be erasable on a predetermined time point when the user ordered it or when a predetermined time interval has passed after the power
25 source is switched off or the information is obtained, the information which should be stored may be prevented from becoming infinitively large.

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In the above embodiment, the center of retrieve area is one, however, such center may be set to be plural. For example, when the several nodes which connect the goal position with the present position are set as the centers of every retrieve areas, it looks like as that the information along a course is referred to. In other words, a problem as that the user demands the information many times in order to get the information on path, disappears. When the nodes in the path from the present position to goal position shown with a thick line are determined to be the centers of the every retrieve areas, an example representing the domain that became a range to be retrieved actually is shown in Fig. 13.

A received data analysis means 61 analyzes data to be provided through the display side communications equipment 21, selects several information contained by said data, and takes out information necessary for an afterward processing, for example, name, location on a map, property, affiliated information contained by respective information. In analysis of data, it is necessary to know with what kind of form the data stores the information. As an example, a case storing the information with an order decided beforehand is shown by Fig. 14. As an other example, a case that the form of the data is contained in the data is shown by Fig. 15. In the example shown in Fig. 15 in addition to above, by utilizing that the name, the location, the property are stored from the top by this order, they are stored with the

form decided beforehand, the data form may be to be specified in the data regarding only the affiliated information.

An icon setting means 62 takes out a corresponding
5 icon from the icon memory based on the property taken out with the received data analysis means 61 so as to set it as an icon showing repesence of the information. The icon setting means 62 further has an icon presence judgment means which judges whether the corresponding icon exists in
10 the icon memory 20, and when the corresponding icon does not exist in the icon memory 20, the icon setting means 62 may require to transmit the corresponding icon to the information offering equipment 2. Otherwise, a means to add a letter or an icon such as an emblem to the information
15 sent from the information offering equipment 2 are prepared and the icon may work may be taken out from the information sent in this way. Then, if an information to show an existence of the icon with the information sent is constituted to be sent simultaneously, it is understood
20 easily that the icon corresponding to the information sent is contained. Figure 16 shows an example of the equipment which displays the information containing the icon which has been sent from the information offering equipment and the icon on a map based on this information.

25 A icon drawing location setting means 63 sets a location of the icon so that the corresponding information are displayed on a suitable location of the map based on a

location information on the map taken out with the received data analysis means 61 and an information from the map display domain setting means 53. When reduction scale of the map changes or the map is scrolled, the location of icon is adjusted again suitably. If the data which have been sent are just indicated on the map, the icons are overlapped or the information isn't settled within a screen of the display sometimes. In such a case, for example, the reduction scale of the map by which the information sent is settled in the same screen is obtained to be notified to the map display domain setting means, and resetting of the location displaying the icon may be done according to the reduction scale changed. An embodiment avoiding the overlap of the icons will be explained in the next. A overlap judgment means to judge the overlap of the icons is provided, and when it was decided that the icons will overlap, the overlap information is notified to the icon display location setting means, and the icons are set so as not to overlap mutually by adjusting the displaying location of the icons overlapped with the icon displaying location setting means. Figure 17 is an example in which overlap of the icons is avoided by resetting of the location of the icons when the two icons are overlapped. In a case of this example, actually, the display of the icons overlapped needn't be done, however, it is shown for describe the operation. An other method to avoid overlap of the icons may be adopted by, for example, changing the

reduction scale of the map, or changing size of the icon.

A icon display means 64 sends a command which displays an image of the icon set by the icon setting means 62 to the graphics processing means 59 at a location set by the icon display location setting means 63.

An example in which the information received from the information offering equipment 2 is displayed with an icon on the map by using above-mentioned construction is shown by figure 18.

In the above embodiment, as the information sent from the outside is shown with an icon on the map, the user easily understands the location of the information that has been sent. While making use of this feature, furthermore, in order to provide an individual information, an icon property setting means 65 may be provided furthermore as shown in the following.

The icon property setting means 65 sets property of an icon such as color and size, intensity, chroma, light on / light off, display / non display, based on information taken out with the received data analysis means 61. And, the icon display means 64 displays the icon based on the property set by the icon property setting means 65. When it is done in this way, the individual information besides the location of the information according to a color of the icon for example, may be displayed. An example will be explained using figure 19 in which received data are information about restaurant and the property of their

color is set. For example, an icon of a restaurant which is not crowded is shown by blue (white in Fig. 19), an icon of a restaurant which is available if waiting a little, is shown by yellow (black in Fig. 19), and an icon of a restaurant which is not available if waiting a little, is shown by red (dotted line in Fig. 19). When the restaurant is not available if waiting a little, it is meaningless that the property may be turned into non-display (transparent color).

10 An arithmetic processing department 10 relates to a navigation system processing to control amount of the information to be communicated so as to be suitable by the present invention furthermore, and to display the received information intelligibly, and has a received data /
15 location memory means 66, an icon select means 67, an inside data retrieval means 68 and a detailed data display means 69.

20 The received data / location store means 66 stores each information provided by the received data analysis means 61, and the location at which the corresponding icon should be displayed is obtained from the icon display location setting means 63 and is stored with each related information.

25 The icon select means 67 decides which of the icon is selected by the location and the received data / location memory means 66 when detecting that the user selects one part of the screen by the user operation analysis means 50.

Then, if the icon selected is decided, the information corresponding to the icon is retrieved from the received data / location memory means 66 and is transmitted to the inside data retrieval means 68.

5 By transmitting the location data of the icon selected with the icon select means to the path account means 51, a course guidance processing to go by way of the location with the icon which the user has selected becomes possible.

10 As means to detect that the user selects one part of the screen, some methods are proposed as following. For example, a pointing device such as a touch panel having many pressure sensors on the screen is provided so as to be set so as to overlap on the screen. Otherwise, a cursor
15 display means for displaying a cursor on the map, a cursor movement means to let the cursor moved, a cursor location acquisition means to calculate the location of the cursor on the map by detecting a quantity of movement of the cursor moved by the cursor movement means, and a means to
20 recognize the determination of the user are prepared, and the user decides after the user let the cursor moved, thereby the location selected by the user is detected. Movement of the cursor is performed by moving the cursor for the screen while keeping the map fixed, or by moving
25 the map for the screen while keeping the cursor fixed. In the case that the cursor displayed in this way is used, the icon may be recognized to be selected by detecting the

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location of the cursor provided by the cursor location acquisition means, on a specified icon, or the icon being most near from the cursor when a distance between the each icon and the cursor is compared with, or the icon being most near from the cursor when a distance between the each icon and the cursor is compared with and it is less than a predetermined set value may be selected. Further, one more example of the detecting means will be explained as following. Providing a button having a tabulation function in an input means, the icon which the user wishes to select may be obtained by changing one display property of the icon which is displayed whenever the button is pushed. The icon which changes display property may be selected sequentially from the center of the screen, or by using the cursor movement input means, the icon almost being in cross course may be selected in the next selection.

The inside data retrieval means 68 obtains a receipt information corresponding to icon selected by the icon select means 67, the detailed information related to this receipt information is retrieved from the internal information memory 13. As mentioned above, referring that most of the information that the navigation system utilizes are the individual information that have the location information on the map, the individual information having the location information same as the location information on the map corresponding to the selected icon may be retrieved from the internal information memory 13. Even if

they are individual information to be related to in addition to above, the locations which should be the same each other on the map may not be equal strictly because of error which occurs on the data processing. In this case, 5 for example, the information of the location which is in a distance within error degree being allowed and in the nearest location is selected as the individual information to be related. Moreover, when the location on the map of the individual information is represented with the area, 10 the overlapped areas are selected as the individual information to be related. Methods to search the individual information to be related are provided easily in the same way as above, for example, the title included in the receipt information may be searched as the key word, and 15 the information common to the receipt information and the information from the internal information memory 13 such as serial number, phone number, and address may be set as the key word for the retrieval.

A detailed data display means 69 transmits a command
20 to display the detailed information that was taken out by
the inside data retrieval means 68, to graphics processing
means 59. Otherwise, it takes out the receipt information
corresponding to the icon selected from the icon select
means 67 from the received data / location memory means 66,
25 transmits the command to display this to the graphics
processing means 59. Then, the receive data may be
displayed according to a display format contained

beforehand in the received data. The detailed information taken out from the inside data retrieval means 68 and the receipt information corresponding to the icon selected are selectively displayed according to a request from the user by a user operation analysis means 50. Otherwise, the detailed information with a disposition decided beforehand and the receipt information may be displayed so as to be overlapped. Besides, in the information stored in the inside information memory 13, a display method of the receipt information is set beforehand, and the detailed information and the receipt information may be displayed according to this setting. Figure 20 is an example, in which, the detailed information in the information selected and the receipt information are displayed so as to be overlapped. In this example, the icon is represented by the property and the name of the individual information, and the location of the icon is disposed in line in the screen, and it may be displayed with an icon like an image thereof on the map.

The select icon emphasis means 70 controls the icon

property setting means so that the icon which the user selected by the icon select means 67 may distinguish the other icon on the screen. The icon property setting means 65 is set so as to change the property of the icon, for example, by changing a color of the selected icon, by raising a intensity of the selected icon, by flashing on and off the selected icon, by reducing the intensity of the icon which isn't selected, or by stopping the display of the icon which isn't selected(transparent color). Figure 10 21 shows an example in which the intensity of the icon which wasn't selected is reduced .

The detailed data display domain setting means 71 sets a domain for indicating the detailed data so that the detailed information taken out with the inside data retrieval means may be displayed to a location on the screen set beforehand. For example, as exemplified in figure 21, left half of the screen is assigned as a domain for displaying the detailed data. As another embodiment is exemplified in figure 1, the location of the selected icon is retrieved from the receive data / location memory means and the domain which does not cover the location is obtained to be set.

As the screen configuration changes when displaying the detailed information to the screen with the detailed data display domain setting means 71, a screen configuration change means 72 sets the display domain of the map according to this change, too. For example, when

the detailed information is displayed on the left half of the screen, the map is to be displayed in the remaining right half. Then, because the location of the icon selected by the user is given, the screen configuration change means
5 are set to scroll the map so that the selected icon comes into a center of right half of the screen, and the icon related to the detailed information is displayed in the central neighborhood of the map, thereby peripheral map information are easily understand. Figure 21 shows an
10 embodiment which displays the icon and the detailed information related thereto as stated above. This embodiment is effective for the user when the user selects one of the icon and watches the detailed information. On the other hand, For example, when the detailed information
15 which wants to watch is successively selected by the icon according to the movement of the cursor, it become difficult to watch it because the scroll of the map occurs whenever the selected icon is changed in sequence. In such a case, it is better to set not to scroll the map even if
20 the detailed information is displayed, and, for example, as shown in figure 1, the detailed information is displayed so that the map is kept to be fixed and the selected icons do not overlap.

In the construction stated above, the detailed data
25 display means 69 is provided to transmit the command to display the detailed information to a screen location set by the detailed data display domain setting means 71, to

the graphics processing means 59.

Being constructed in this way, Detailed information of the icon which a user selected may be displayed keeping the icon displayed on the map, and furthermore, the
5 objected icon is distinguished from other icons easily, the detailed information display which is easy to be understood very much may be provided.

In the above embodiment, a case that the detailed data become bigger than the domain set by detailed data
10 area setting means, isn't assumed. This is because it is expected that the information is provided to a driver especially. In other words, when bigger data than a domain are expected to be displayed, an operation to let the displayed data moved becomes necessary, and a burden of the
15 user is increased. Actually, a case to want to display more data is expected however. In an embodiment which solves this problem, the detailed information is divided into several pages, each of which become smaller than the domain where is set by the detailed data area setting means, and
20 a display means to show existence of the former page or the next page is provided, and the page is constructed to be changed according to a request by the user, thereby the burden of the user is decreased. In figure 22, a case that the information is displayed into two pages is shown. In
25 such a construction as above, it is understood easily that the scroll operation by the user is performed only for a map. Accordingly when the user operation analysis means

the map display domain setting means 53, the total screen returns to display the present position in the center of the map. In the above embodiment, the user does a change of the screen configuration, however, it may be assumed that
5 change timing may be replaced after a predetermined time has passed, or it may be replaced when velocity of the car becomes faster than a predetermined value.

The information offering equipment 2 will be explained using figure 3.

10 The information offering equipment 2 has a mail server 23, a WWW server 24, an internet navigation server 25, a user authentication server 26, a control unit 22, a gateway 27 and an offering side communication equipment 28.

The gateway 27 has a unique address which is
15 discriminated from other equipment connected to the network 4, it is connected with the network 4 and lead to communicate with the information offering server which is communicated with the network 4, and it receives an information that has been sent through network 4 to the
20 information offering equipment.

The offering side communications equipment 28 communicate with the information display equipment 1 so as to send or receive the information.

The mail server 23 stores an electronic mail sent to
25 the user who is capable to access to the information offering equipment 2 and outputs the electronic mail which is received according to request of the user.

The WWW server 24 stores the information is such as a letter, a sound or a voice, a standstill drawing, and an animation, according to a format decided beforehand, and provides an information stored according to a request of the user.

The internet navigation server 25 stores the information provided through the gateway 27 and the offering side communication device with a format decided beforehand in order to indicate it on the information display 1, and outputs it to the information display 1 by request of the user. The internet navigation server 25 receives the updating information from the information offering server 3, and stores the received updating information instead of the corresponding old information, and updates the information so that the information to offer to the information display 1 becomes to be new continuously.

The user authentication server 26 stores an information of the user who is capable to access to the information offering equipment 2 or an information to manage the service that the information offering equipment 2 may offer to every user, and is capable to limit the user who demand to connect or to limit the service provided to the user through the gateway 27 and the offering side communications equipment 28.

The control unit 22 controls the various servers 23, 24, 25, 26, the gateway 27, and the offering side

communications equipment 28, and offers an electronic mail service performed in the world of a network such as internet etc. and a WWW (World Wide Web) service etc.. Furthermore, the information that the user demands is offered by processing as that the information provided to the information display equipment 1 is collected through network 4, by processing as that the collected information is stored in the network 4, by processing as that the corrected information is changed into a suitable information formality in order to transmit and display it to the information display equipment, and by processing as that the information demanded by the user is referred to be taken out from the internet navigation server, and by processing as that a retrieve result is transmitted to the information display equipment.

A configuration of the function means of control unit 22 is explained using figure 7.

As shown in figure 7, the control unit 22 relates to a means for the navigation system processing in which the information provided to the information display equipment 1 is collected, the amount of the information to transmitted in this invention is optimized, and the received information is displayed intelligibly by the user, and has an individual information reception means 80, an individual information updating means 81, a user request analysis means 82, an information retrieval means 83 and an information processing means 84.

The individual information reception means 80 receives the individual information which the information offering server provided on the network top sends to the information offering equipment 2 through the gateway 27.

5 The individual information updating means 81 stores the individual information which is received by the individual information reception means 80 in the corresponding domain of the internet navigation server.

10 The user request analysis means 82 analyzes the request of the user based on the data sent from the information display equipment 1 and controls each unit in the control unit in order to execute the request. For example, when the request to offer vacant information has been sent together with a retrieve items such as coordinate
15 of object position and hotel, the information is transmitted to the information retrieval means and a necessary information is retrieved from the internet navigation server 25 to be transmitted to the information display equipment 1. Then, a registration information of
20 the user who is capable to receive the service offered by the information offering equipment 2 is stored in the user authentication server 26, an identification data of the user is obtained from the information display equipment 1, and the service that doesn't fit to a condition is operated
25 not to be executed based on these information, thereby, for example, when a service charging a fee is prepared, it becomes impossible to prevent the user from escaping the

charging of the fee.

The information retrieval means 83 searches the information that the user needs from the internet navigation server 25 according to the retrieval item that has been sent from the information display 1 and hands the search results to the information processing means 84. As mentioned above, the retrieval item sent from the information display 1 may include the conditions such as on business or available to be utilized. Such conditions may not be set in the information display 1, and the information retrieval means 83 may set it in the search condition automatically.

The information processing means eight 4 converts the plural information searched by the information retrieval means 83 into the data that the information display 1 is capable to process, and hands the converted data over to the offering side communication device 28, thereby, the retrieval information becomes to be possible to be indicated with the information display 1. In order to realize optimization of the communicated information amount that is a distinctive characteristics of the present invention, the information which is updated with a low frequency such as the brief description of the facility is eliminated from the individual information to be sent to the information display 1. In addition to above, according to the environment of the information display, for example, situation whether the moving body is in moving or in

stopping, the communicated information amount changes so that intermission of the communication line changes, and the reduction of the information may be executed by judging the change. For example, as it is possible to understand whether the moving body is moving or not may be shown with the information display 1, and the information offering device 2 is notified of the effect when stopping, and the information processing means 84 is operated not to control the information reduction. The information processing means 84 may be operated to change the amount of the information to be transmitted to the information display 1. For example, maximum amount of the information to transmit may be set beforehand, the communicated information amount sent by one time is transmitted not to exceed the maximum amount, or a processing to make the size of the image is performed when the image data are sent. Moreover, the data reduction process as above is decided to be operated by obtaining the information as that the situation of the information display 1, for example, the setting car is running or not, the communications means is PHS or a cellular phone, and the display 11 of information display 1 is large or small.

The above configuration example premises that the information is sent from the information offering server 3. Furthermore, a configuration of the control unit 22 that is capable to demand the individual information will be explained when the information offering equipment 2 directly access in the information offering server 3 The

control unit 22 has a server information store means 85, a retrieve object server setting means 86 and an individual information request means 87 furthermore.

5 The server information store means 85 stores the information such as kind and contents, address, access method of the information that may be offered by every information offering server 3.

10 The retrieve object server setting means 86 sets the information offering server 3 in order to obtain the information necessary for the internet navigation server 25 based on the information stored by the server information store means 85. Then, in a case that the user request analysis means 82 is operated to obtain the information by accessing the information offering server 3 at a point in
15 time when the user requests the information, the information offering server 3 which is capable to offer the information requested by the user, may be retrieved so as to be set. When being constructed in this way, as it becomes possible to access the information offering server
20 3 which is necessary and minimum when the information is necessary, burden of the network may be reduced.

The individual information request means 87 accesses the information offering server 3 set as the retrieve object and outputs the request to offer the information.
25 The timing for requesting an information offering may be obeyed to the indication by a timer which promotes a request starting in a time set previously, or the user

request analysis means 82 operates to obtain the information by accessing the information offering server 3 at the point in time when the user request the information, and the timing may be a point in time when the retrieve object server setting means 86 sets the retrieve object server.

In the example constituted as above, it is premised that the information that has been sent from the information offering server 3 are respectively optimized. Furthermore, in the information offering equipment 2, a construction which make the information stored in the internet navigation server 25 most suitable will be explained.

The control unit 22 has a fixed form format setting means 88 and a selection object data setting means 89 furthermore.

The fixed form format setting means 88 sets a format of the information stored in the internet navigation server 25, and makes for the individual information updating means 81 to be possible to update the information of the internet navigation server 25 according to this format. For example, as shown in figure 14, the format is provided to fit to the information display equipment 1.

A selection object data setting means 89 sets whether the information is renewed according to every property of the information, and makes for the individual information updating means 81 to be possible to update the information

of the internet navigation server 25 according to this setting. For example, if the information sent from the information offering server are divided in to several files, an extent that may be stored in the internet navigation server is sets utilizing the extent determined depending on the property.

In the above embodiment, the information offering equipment 2 is constituted expecting to send the information into the information display equipment 1, however, as the internet navigation server is one kind of the server too. Therefore, a construction as that the user on the internet accesses the information on the internet navigation server, may be provided, or other construction as that the user of the information display equipment 1 accesses the server on the network except the information offering equipment 2 through this information offering equipment 2, may be provided.

Because, the information is sent from the information offering server connected to through a network when the information is updated, if the information sent is stored, the latest information may be stored. Furthermore, as the necessary information may be obtained by accessing the necessary information offering server on a timing that the user wants, the latest information may be accessed in this case too. Relating to the information provided to the user and sent from the information offering equipment to the information display equipment, the amount of the data is

reduced at need, thereby it becomes possible to transmit the information in a short time, or communication by using a cellular telephone system becomes possible.

The information that is sent from the information offering equipment is displayed with an icon on the corresponding map top by using a location information of the information, the location of the information is easily understood, and because only of the icon is display, the gaze of the user isn't needed, it is easy for the driver to understand it. Because the detailed information of the corresponding information is displayed by selecting the icon displayed, the user may get the needed information by an minimum operation with a good retrieve efficiency. When there is detailed information in the information display equipment, it is possible to provide enough information for the user by showing the detailed information, and as there is no need to send the detailed information from the information offering equipment, communication amount of the data decreases, and it becomes possible to transmit it in a short time and the cellular telephone system becomes easy to be utilized still more.

WHAT IS CLAIMED IS;

a map display means for reading out the map of the display domain set by said map display domain setting means,
10 from said map memory,

an individual information reception means for
15 receiving dynamic information part of said individual
information supplied from the outside, by retrieving it
with the display domain output from said map display domain
setting means and the retrieval condition output from said
retrieval condition setting means, and for outputting said
20 dynamic information part corresponding to specified
location on the map,

25 a receipt information analyses means for outputting
said individual information combined with said dynamic part
from said individual information reception means and said

static information part from said individual information memory corresponding to said specified location on the map, and

an individual information display means for
5 displaying said individual information from said receipt information analyses means on said display equipment.

2. A navigation display system as defined in claim 1, characterized in that

said receipt information analyses means outputs at
10 least one part of said individual information as an icon, and

said individual information display means displays said at least one part of said individual information as said icon.

15 3. A navigation display system as defined in claim 1, further comprising

an icon setting means for setting up an icon corresponding to said individual information output from said individual information memory, wherein

20 said individual information display means displays at least one part of said individual information with an icon from said icon setting means.

4. A navigation display system as defined in claim 1, characterized in that

25 said special location is a car's position.

5. An information display system, comprising

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a map display domain setting means to set a display domain of a map,

a map memory means to store a map data,

a map display means to read out and display said map
5 data corresponding to a domain set by said map display domain setting means from said map memory means,

a retrieval range setting means to set a retrieval range including at least a retrieve object property in order to retrieve a needed information from retrieved
10 objective data,

a data transmission means to transmit said retrieval range set by said retrieval range setting means,

a data receiver to receive data sent from outside, said data including at least one individual information
15 retrieved according to said retrieval range transmitted by said data transmission means and an information relating to at least position on said map contained in said individual information,

a received data analysis means to discriminate said
20 individual information contained in said data received by said data receiver,

an icon setting means to set an icon decided by said retrieve object property according to said every individual information discriminated by said received data analysis
25 means,

an icon display position setting means to set a display position of said icon set by said icon setting

means based on said information of said position on said map contained in said individual information and said map display domain set by said map display domain setting means according to said individual information discriminated by
5 said received data analysis means, and

an icon display means to display said icon set by said icon setting means according to said every individual information discriminated by received data analysis means, on the map displayed by said map display means, at said position set by said icon display position setting means, whereby

said information display system characterized by displaying said icon on said map corresponding to said individual information retrieved in a range of said set
15 retrieval range.

6. An information display system as defined in claim 5,
further comprising

an icon property setting means for changing a display
20 form of said icon set by said icon setting means, according
to said icon property information contained in said
individual information sent from the outside, wherein

said icon display means displaying said icon set by
the icon setting means, corresponding to said individual
25 information discriminated by said received data analysis
means, on the map displayed by said map display means, at
said position set by said icon display position setting

means, according to a display form set by said icon property setting means, thereby

5 said display form of said icon is changeable according to said icon property information contained in said individual information.

7. An information display system as defined in claim 5 or 6, further comprising

10 a retrieval range display means for displaying a domain showing a retrieval object area contained in said retrieval range and set by said retrieval range setting means on the map top, thereby said retrieval object area is indicated on the map.

15 8. An information display system as defined in claim 7, further comprising

20 a temporary memory means for memorizing said retrieval object area of said data received by said data receiver and a receipt time displayed by said retrieval range drawing means when receiving said data, thereby

a range of said data already received and stored in said temporary memory means and said receipt time are displayed by said retrieval range drawing means.

25 9. An information display system as defined in claim 5 or 6, further comprising

an icon store means to store plurality of said icons,

thereby

5 10. An information display system as defined in claim 5
or 6, wherein

11. An information display system as defined in claim 10, further comprising an icon store means to store plurality of said icons, and

12. An information display system as defined in claim 5 or 6, further comprising

and to generate a resetting command to said icon display position setting means, said map display domain setting means or said icon property setting means when said icons are overlapped, thereby

5 when said overlap between said icons is judged by said icon overlap judgment means, said display position of said icon is changed by said icon overlap judgment means, said map display domain is changed by said map display domain setting means, or said size of said icon is changed
10 by said icon property setting means, so that said overlap between said icons is controlled to be less than half of said size of said icon.

13. An information display system, comprising
15 a data receiver to receive data sent from outside, said data including at least one individual information containing an icon information capable to at least set icon,
 a received data analysis means for discriminating said individual information contained in the data received
20 by said data receiver,
 an icon setting means to set said icon according to said icon information contained in said every individual information discriminated by said received data analysis means,
25 an icon display position setting means to set a display position of said icon set by said icon setting means based on said individual information discriminated by

data.

16. An information display system as defined in claim 13 or 14, further comprising

5 an inside data store means to store said detailed
data, and an inside data retrieval means to retrieve said
information related to said individual information from
said inside data store means based on said individual
information which comes under an icon selected provided by
10 icon select means mentioned above, thereby said detailed
information relating to said individual information
selected is retrieved from said inside data stored
beforehand, and said detailed information is displayed
relating to said individual information corresponding to
15 said selected icon.

17. An information display system as defined in claim 16,
wherein

20 said individual information sent from outside
data display means displays said detailed information
provided by said inside data retrieval means and said added
information contained in said individual information, said
detailed information relating to said corresponding
25 individual information taken out from said inside data
stored beforehand, and said added information contained in
said corresponding individual information are displayed as

an information relating to the individual information
corresponding to said selected icon.

18. An information display system, comprising

5 a map display domain setting means to set a display
domain of a map,

a map memory means to store a map data,

a map display means to read out and display said map data corresponding to a domain set by said map display

10 domain setting means from said map memory means,

a retrieval range setting means to set a retrieval range including at least a retrieve object property in order to retrieve a needed information from retrieved objective data,

15 a data transmission means to transmit said retrieval
range set by said retrieval range setting means,

a data receiver to receive data sent from outside, said data including at least one individual information retrieved according to said retrieval range transmitted by said data transmission means and an information relating to at least position on said map contained in said individual information,

a received data analysis means to discriminate said individual information contained in said data received by said data receiver,

an icon setting means to set an icon decided by said
retrieve object property according to said every individual

information discriminated by said received data analysis means,

an icon property setting means to change a display form of said icon set by said icon setting means according to an icon property information contained in said individual information,

an icon display position setting means to set a display position of said icon set by said icon setting means based on said information of said position on said map contained in said individual information and said map display domain set by said map display domain setting means according to said individual information discriminated by said received data analysis means,

an icon display means to display said icon set by said icon setting means according to said every individual information discriminated by received data analysis means, on the map displayed by said map display means, at said position set by said icon display position setting means,

a received data / position memory means to respectively store said individual information discriminated by said received data analysis means, with said display position of said icon set by said icon display position setting means,

an icon select means capable to select one of said icons displayed by said icon display means,

an inside data store means store said detailed data,

an inside data retrieval means to retrieve said

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information related to said individual information
corresponding to said icon selected by said icon select
means from said inside data store means, and

a detailed data display means to display said
5 detailed information retrieved by said inside data search
means, whereby

10 said icon is displayed on said map corresponding to said individual information retrieved in a range of said retrieval range set by said retrieval range setting means so as to be capable of being selected said icon, and when said icon is selected, said detailed information is displayed relating to said individual information corresponding to said selected icon stored beforehand in said inside data store means.

15

19. An information display system as defined in claim 18,
further comprising

a select icon emphasis means to emphasize said icon selected with said icon select means by changing a display form of said icon which is displayed, and

said icon selected by said icon select means is displayed to be easily distinguished from said icon which is not selected.

25 20. An information display system as defined in claim 18
or 19, further comprising

a detailed information display domain setting means

to set a display domain of said detailed information taken out by said inside data retrieval means,

5 a display configuration change means to change configuration on a screen of the display when said icon is selected by said icon select means or said detailed data display means finishes to display said detailed information, thereby said display configuration on the screen is changed when said detailed information relating to said individual information selected by said icon select means
10 is displayed and said map displaying said icon selected by said icon select means and said detailed information are displayed on the same screen.

21. An information display system as defined in claim 18
15 or 19, further comprising

a detailed data display domain calculation means to calculate a display domain of said detailed data taken out by said inside data retrieval means from said display position of said selected icon obtained by said received
20 data / position memory means, wherein

when said detailed information relating to said individual information selected by said icon select means is displayed, a map displaying said icon selected by said icon select means and said detailed information are
25 displayed on a same screen by displaying said detailed information at a domain that doesn't cover said selected icon.

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22. An information display system, comprising
an individual information receiver to obtain data
transmitted from information offering servers connected
5 through a network,
an information memory means to store an information
provided by said individual information receiver,
an individual information updating means to store
said information provided by said individual information
10 receiver in said information memory means,
a data receiver to receive a retrieval range of said
individual information, a data retrieval means to retrieve
data stored in said information memory means according to
said retrieval range of said individual information
15 provided by said data receiver,
a data processing means to process one or more said
individual information taken out by said data retrieval
means, a data transmission means to transmit a retrieved
result of said data retrieval means processed by said data
20 processing means mentioned above, thereby said individual
information provided from said information offering servers
on a said network is obtained and is stored, and
an information conforming to said retrieval range is
retrieved from said stored individual information and is
25 transmitted.

23. An information display system as defined in claim 22,

wherein characterized in that

24. An information display system as defined in claim 22
10 or 23, wherein characterized by further comprising

a server information store means memorizing kind of said information, address, and access method offered by said information offering servers according to said respective information offering servers,

15 a retrieval object server setting means to set a
server to offer said individual information from said
information offering servers registered in said server
information store means, and

an individual information request means to request
20 offering of said information by accessing said information
offering servers set by said retrieval object server
setting means, thereby

a latest information is obtained by accessing said information offering servers and said individual
25 information is renewed by storing said latest information in said information store means.

25. An information display system as defined in claim 24,
wherein characterized in that

whenever time set beforehand passes, said individual information request means obtains said latest information by accessing said information offering servers, and said individual information is renewed by storing the latest information in said information memory means.

26. An information display system as defined in claim 24,
10 wherein characterized in that

said retrieve object server setting means sets said information offering server for obtaining said individual information on the basis of said retrieval range of the individual information received by said data receiver,

15 said individual information request means obtains
said individual information by accessing the information
offering server which responds a case that said retrieve
object server setting means sets the information offering
server for obtaining said individual information so as to
20 offer said latest information, and

said individual information is renewed by using said latest information.

27. An information display system as defined in claim 22,
25 wherein characterized further comprising

a conventional format setting means to set a format to be stored in said information memory means, and

a selected object data setting means to limit property of said data stored in said information memory means, whereby

when said individual information updating means
5 stores said individual information from the information offering server which is obtained by said individual information receiver into said information memory means, and

said individual information is changed into a format
10 set by said conventional format setting means so as to be stored, or said information memory means only stores property set by said selected object data setting means, thereby quantity of said individual information is controlled to be optimum.

15

28. An information display system as defined in claim 22, wherein characterized in that

data to receive a message by data receiver mentioned above contain amount of information reduction request
20 presence information furthermore, and

when an information amount reduction request is ordered, said data processing means reduces said information provided from said information retrieval means by a method determined beforehand so that communication
25 complexity is controlled to be optimum.

29. A navigation system comprising:

latest individual information provided by said information offering server, said provided individual information is displayed on said map, and said latest individual information is simply displayed with a little communication 5 complexity by storing said detailed information related to said individual information in said information display system.

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FIG.1

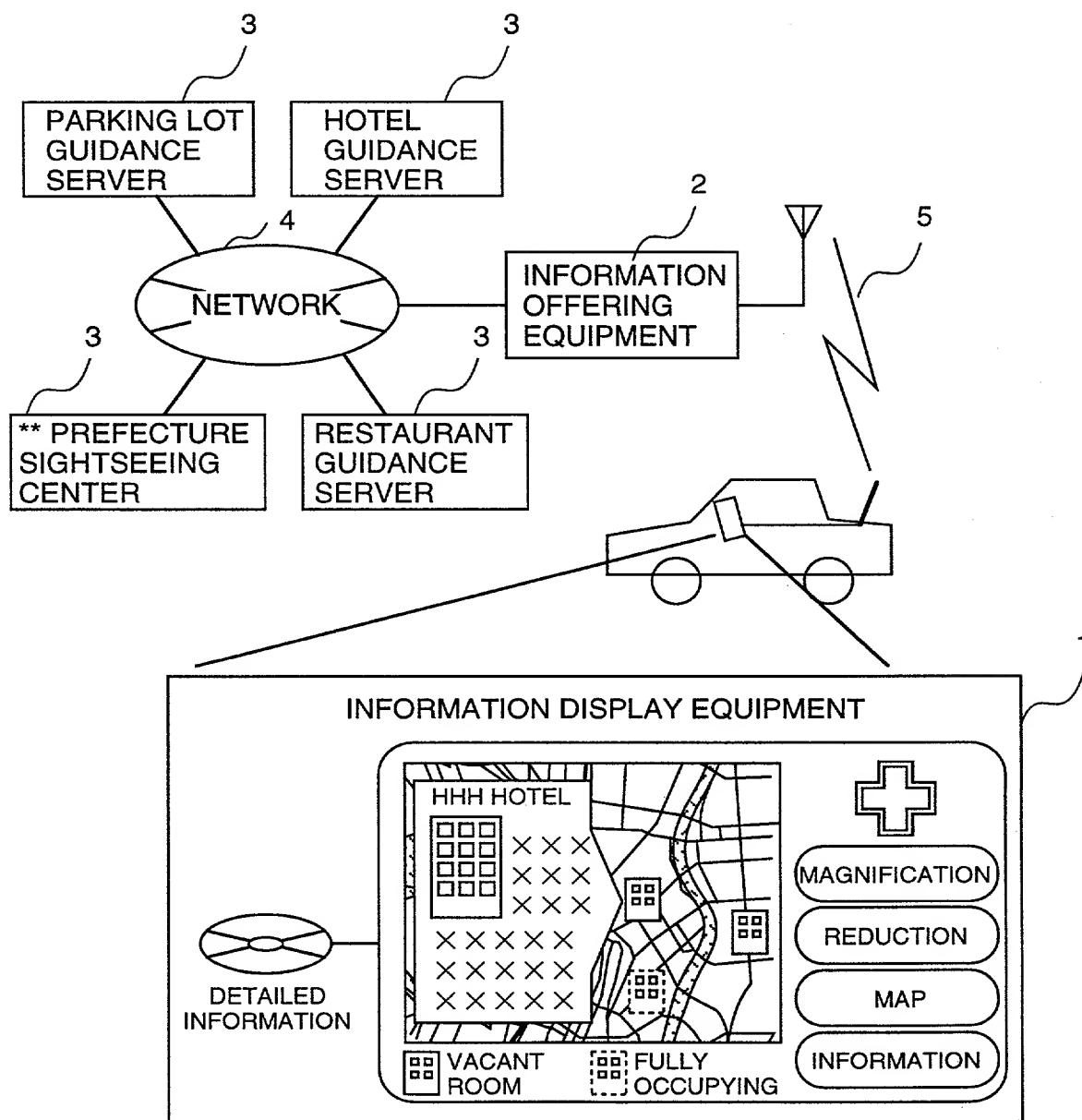


FIG.2

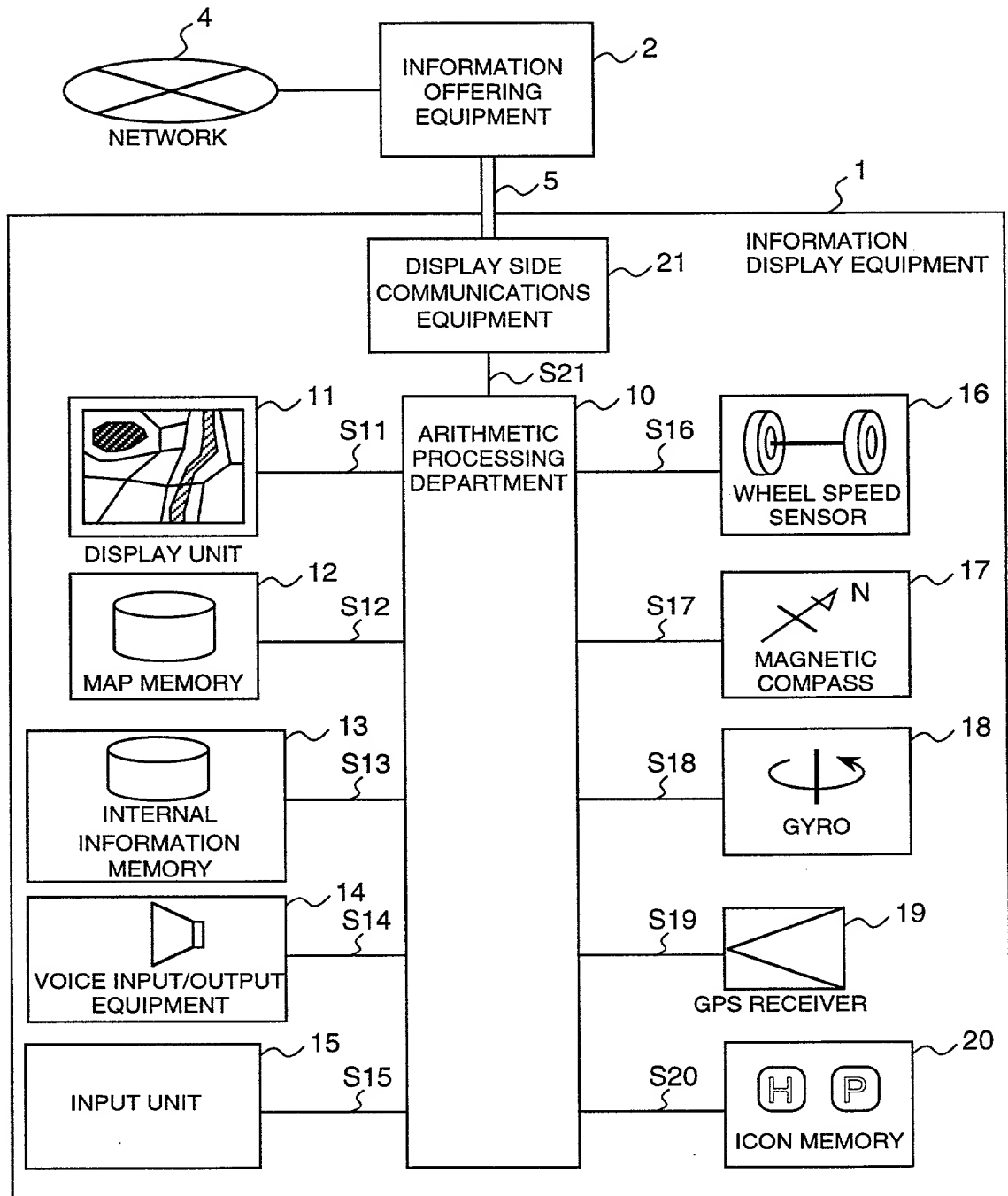


FIG.3

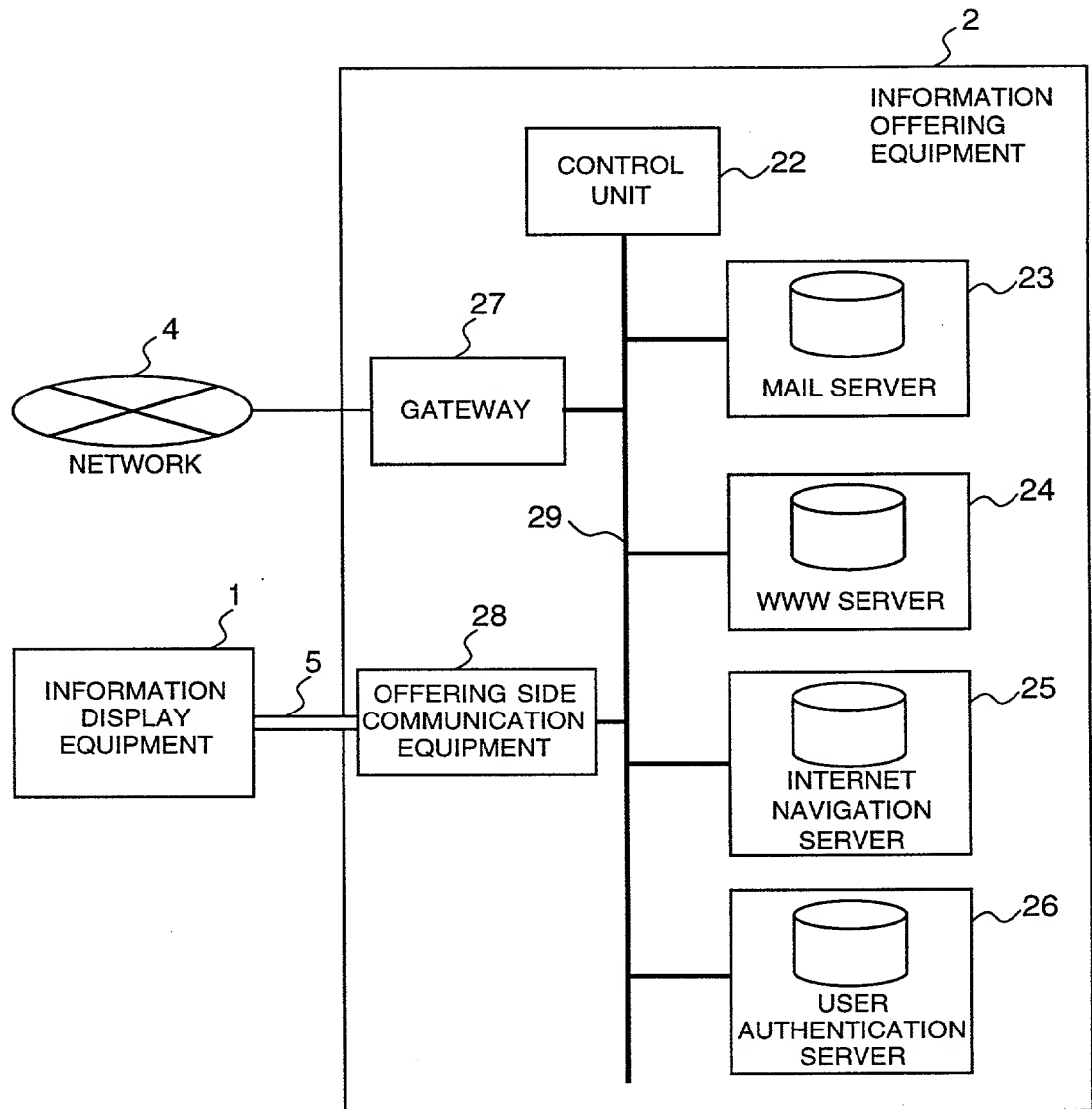


FIG.4

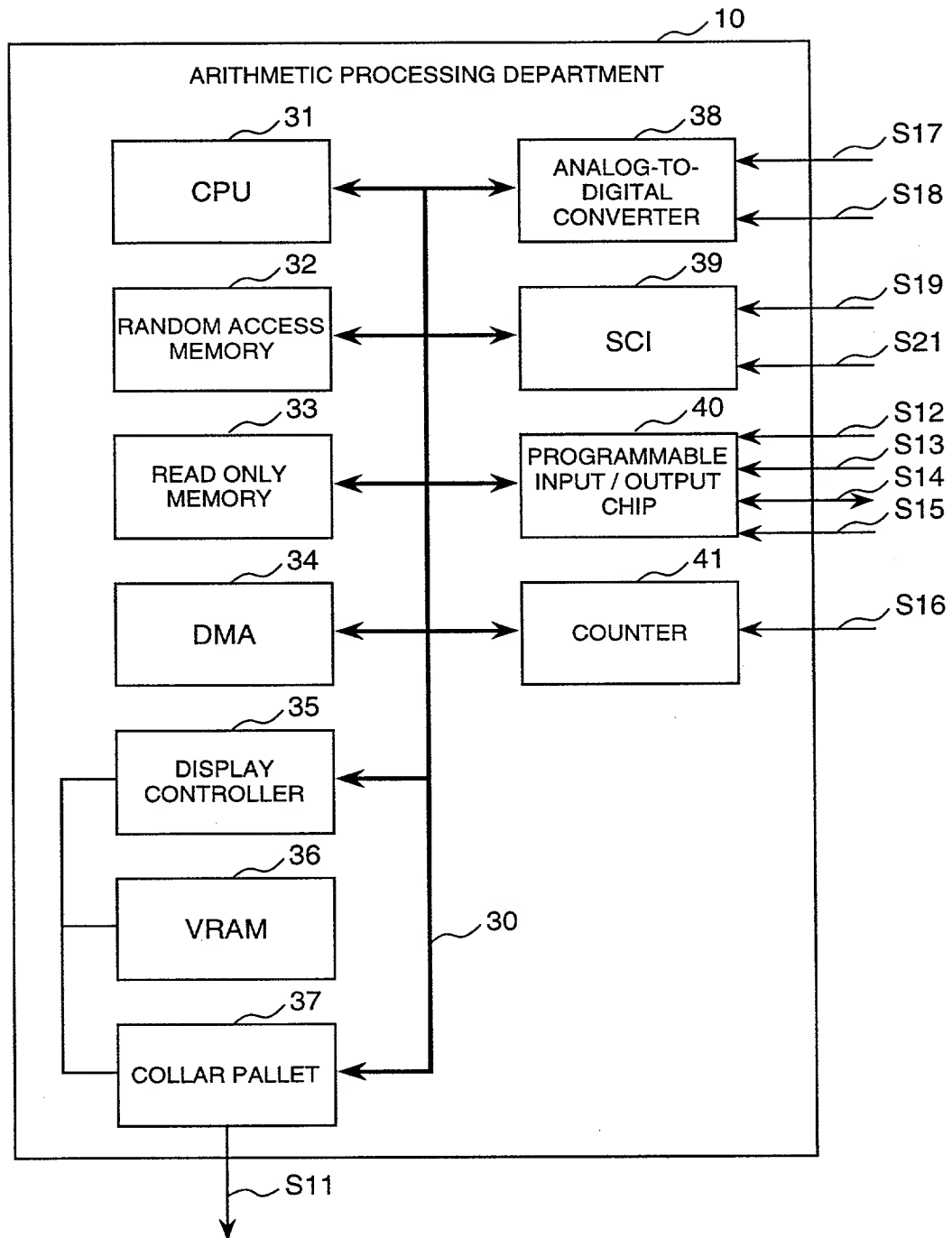


FIG.5

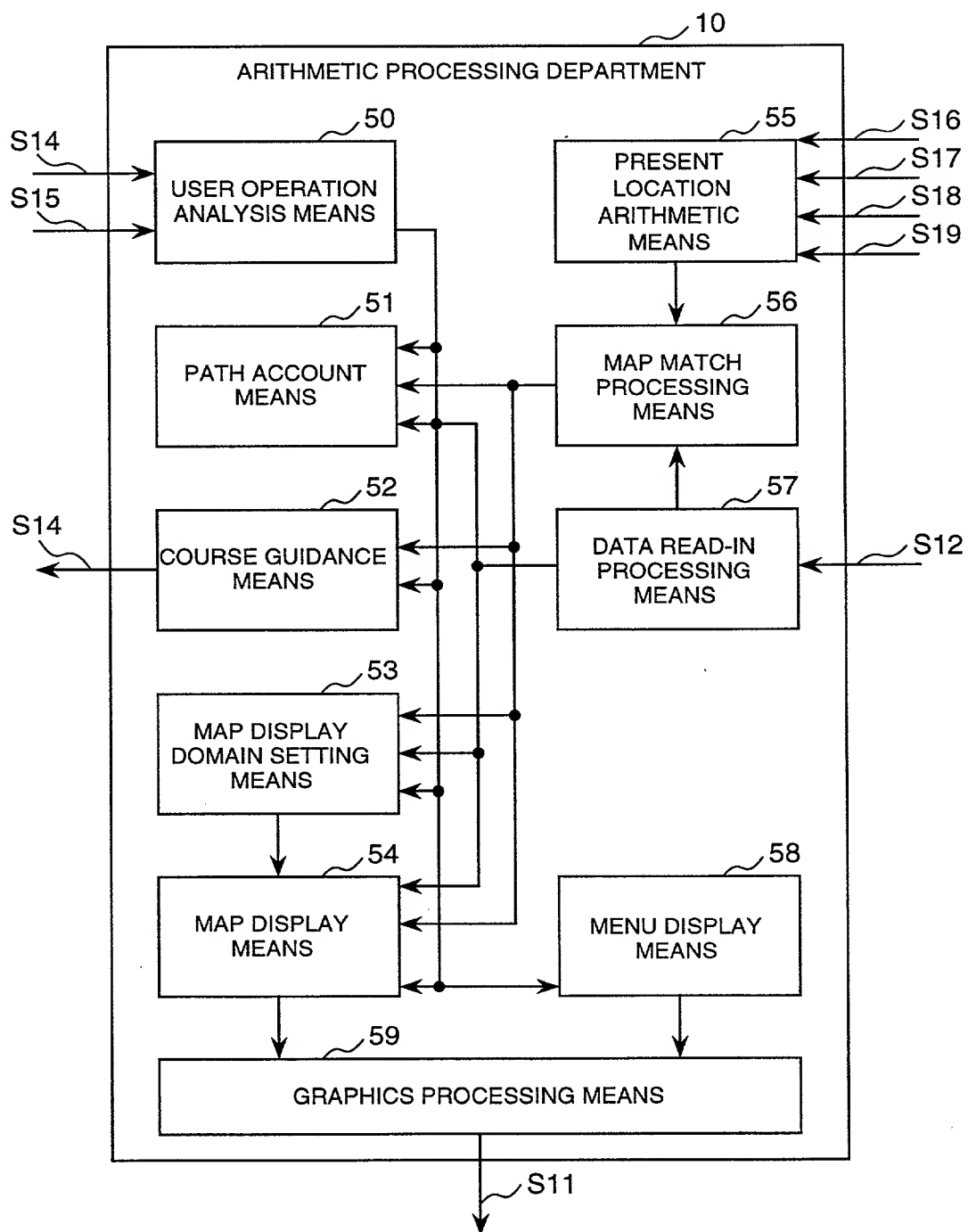


FIG. 6

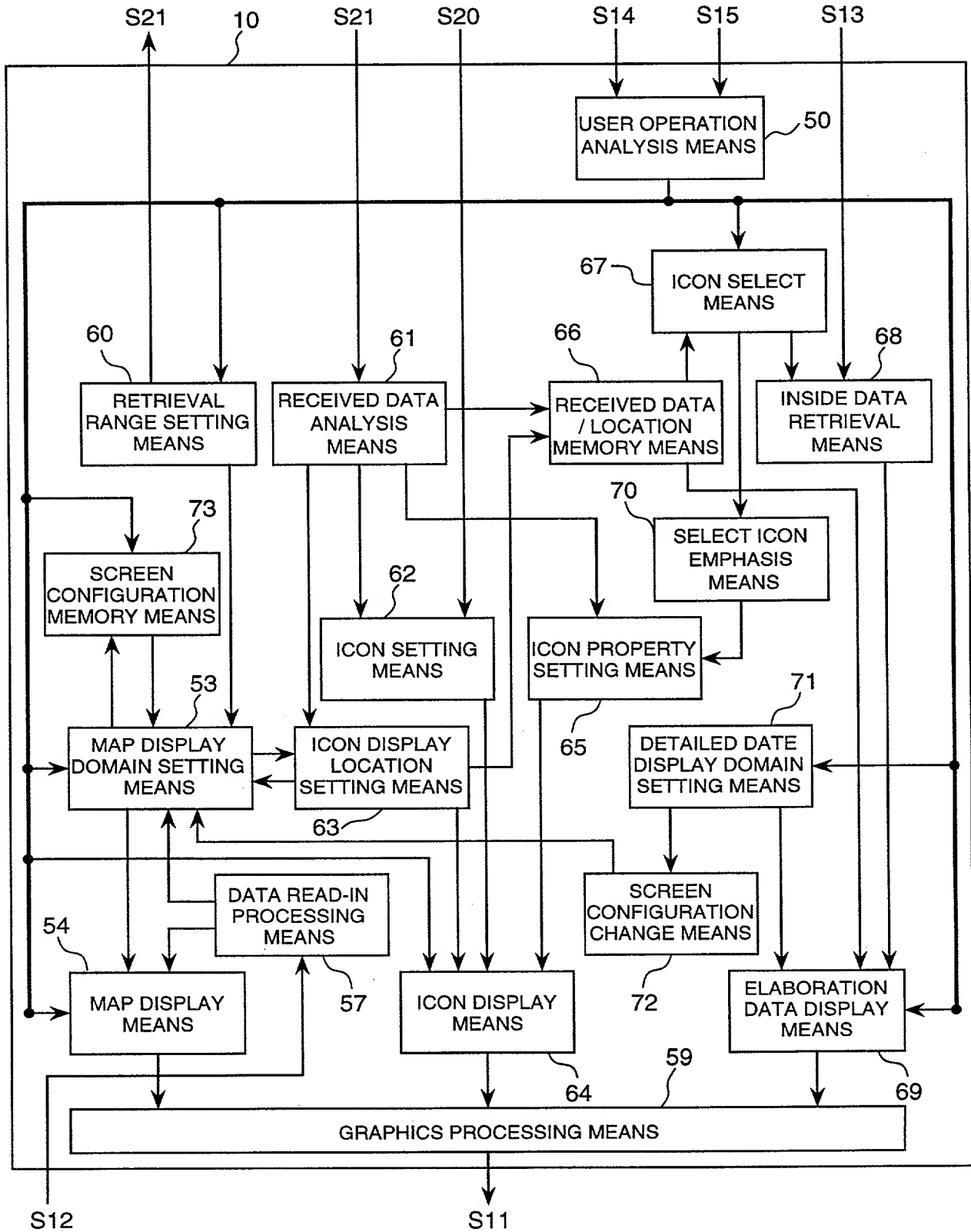


FIG.7

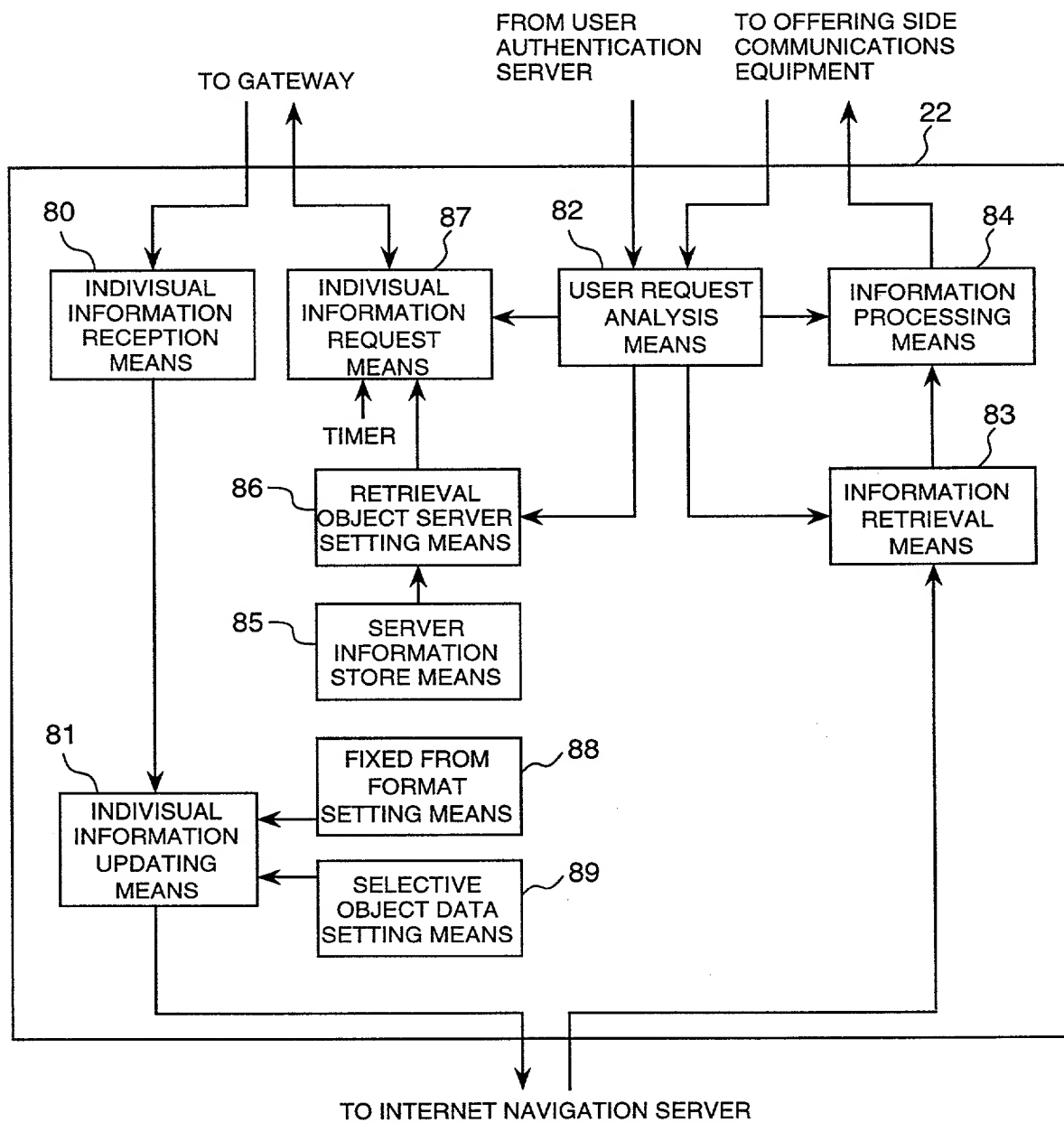


FIG.8

1

PLEASE SELECT INFORMATION THAT YOU WANT TO RETRIEVE.

HOTEL	PRESENT POSITION NEIGHBORHOOD
RESTAURANT	GOAL POSITION NEIGHBORHOOD
PARKING LOT	SELECT ON A MAP

MAGNIFICATION

REDUCTION

MAP

INFORMATION

FIG.9

1

PLEASE APPOINT A RETRIEVING AREA.

TOLL NUMBER 03

LOCAL OFFICE NUMBER 3333

0 1 2 3 4 5 6 7 8 9

MAGNIFICATION

REDUCTION

MAP

INFORMATION

FIG.10

1

PRIOR RETRIEVE SETTING

IT WILL BE RETRIEVED WITH CONTENTS SET AS FOLLOWS.


OVERALL LENGTH OF A CAR	WIDTH	HEIGHT
4.5M	3.5M	1.5M

CREDIT CARD

☒ ABC ☐ DEF ☐ GHI

OIL COMPANY

☒ A oil ☐ B oil ☒ C oil



MAGNIFICATION

REDUCTION

MAP

INFORMATION

FIG.11

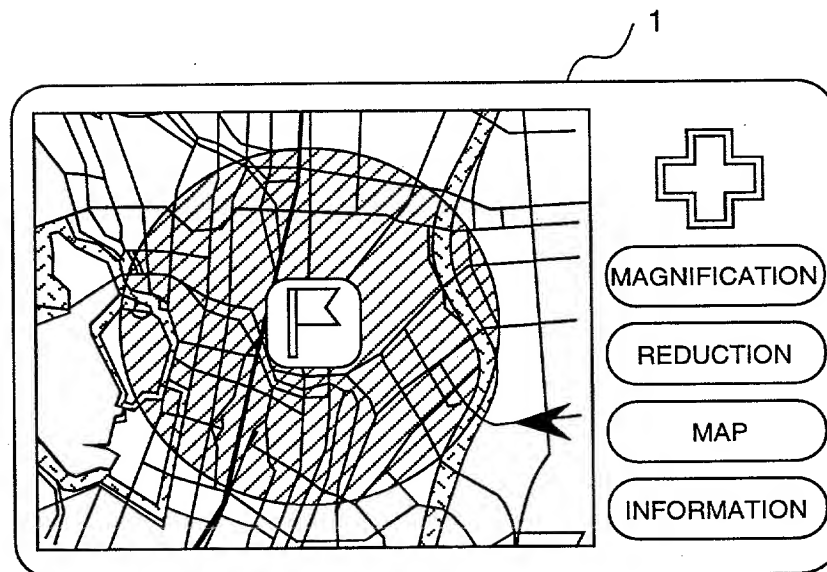


FIG.12

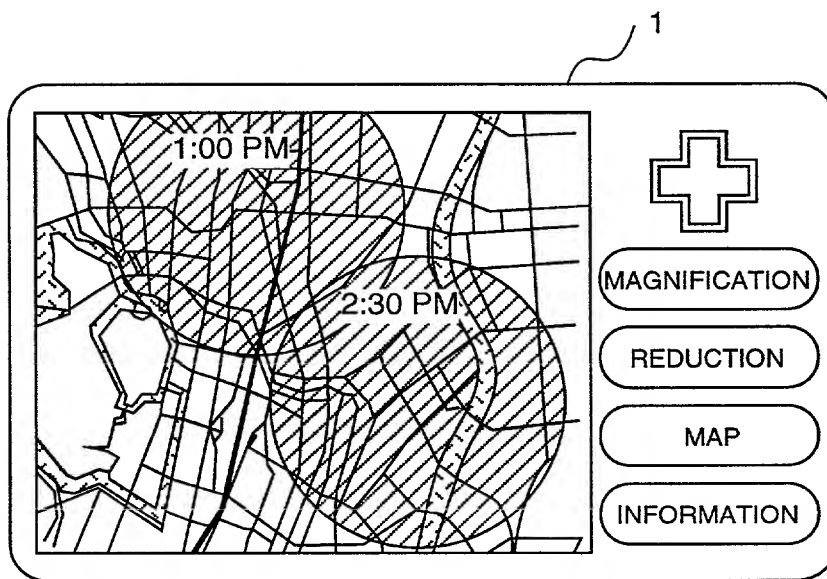
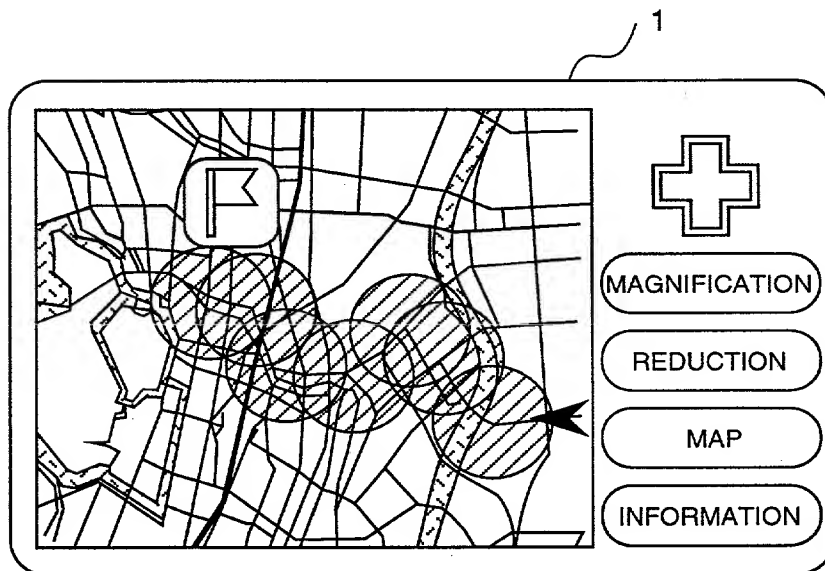


FIG.13



2

<NAME>	<NORTH LATITUDE>	<EAST LONGITUDE>	<PROPERTY>	<DYNAMIC INFORMATION>
HHH HOTEL	35.42'45"	139.46'28"	HOTEL	SIGLE ROOM VACANT 5, TWIN ROOM VACANT 7, 5 MINUTES FROM OBJECT LOCATION
OHEDO MINSYUKU H	35.42'52"	139.46'25"	PRIVATE HOME PROVIDING MEALS AND LODGING	ROOM FOR 4 PERSON VACANT 2, FIREWORKS MEETING IS HELD NOW
H&H TOKYO	35.42'55"	139.46'27"	CAPSULE TYPE HOTEL	VACANT TODAY ¥ 3500 / A NIGHT SAUNA IS FREE

FIG.15

<INFORMATION 1> <NAME> HHH HOTEL <NORTH LATITUDE> 35.42'45"
<EAST LONGITUDE> 139.46'28" <PROPERTY> HOTEL <OTHER INFORMATION>
<LETTER NUMBER> 8 <LINE NUMBER> 3
<DATA> SIGLE ROOM VACANT 5 <LINE FEED> TWIN ROOM VACANT 7
<LINE FEED> 5 MINUTES FROM OBJECT LOCATION

<INFORMATION 2> <NAME> OHEDO MINSYUKU H <NORTH LATITUDE> 35.42'52"
<EAST LONGITUDE> 139.46'25" <PROPERTY> PRIVATE HOME PROVIDING MEALS AND
LODGING
<OTHER INFORMATION> <LETTER NUMBER> 6 <LINE NUMBER> 3
<DATA> ROOM FOR 4 PERSON VACANT 2 <LINE FEED> FIREWORKS MEETING IS HELD NOW
<LINE FEED> <BUTTON> RESERVATION
<EXECUTION> <TEL> 03-333-****

<INFORMATION 3> <NAME> H&H TOKYO <NORTH LATITUDE> 35.42'55"
<EAST LONGITUDE> 139.46'27" <PROPERTY> CAPSULE TYPE HOTEL
<OTHER INFORMATION> <LETTER NUMBER> 9 <LINE NUMBER> 4 <DATA> VACANT
<LINE FEED> TODAY \3500/ A NIGHT <LINE FEED> SAUNA IS FREE
<LINE FEED> <BUTTON> NEXT PAGE
<EXECUTION> <NEXT> <LETTER NUMBER> 6 <LINE NUMBER> 4 <DATA> TELEPHONE
<LINE FEED> 03-333-78** <LINE FEED> <BUTTON> RESERVATION <EXECUTION> <URL>
<http://WWW.CAPH&Htokyo.co.jp>. <LINE FEED> <BUTTON> FRONT PAGE <EXECUTION>
<BREV>

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<NAME> HHH HOTEL <NORTH LATITUDE> 35.42'45" <EAST LONGITUDE> 139.46'28" <ICON> H
<NAME> HOTEL XYZ <NORTH LATITUDE> 35.42'40" <EAST LONGITUDE> 139.46'31" <ICON> XYZ

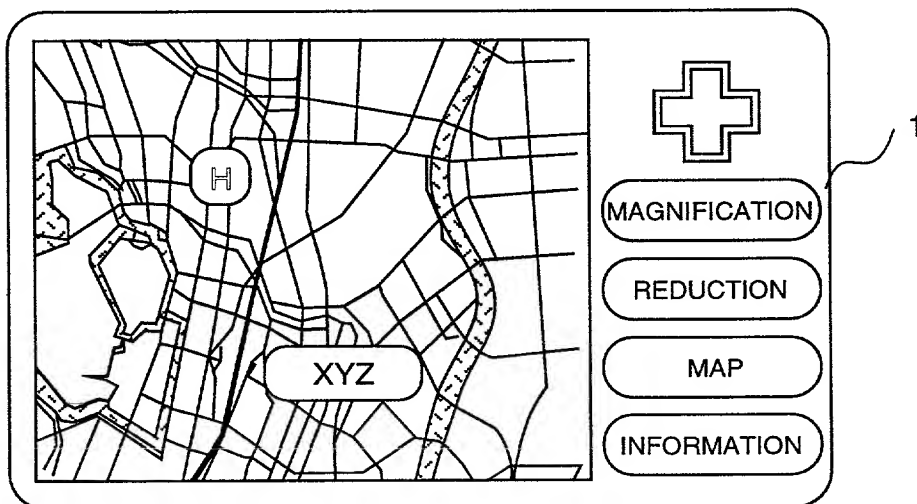


FIG.17

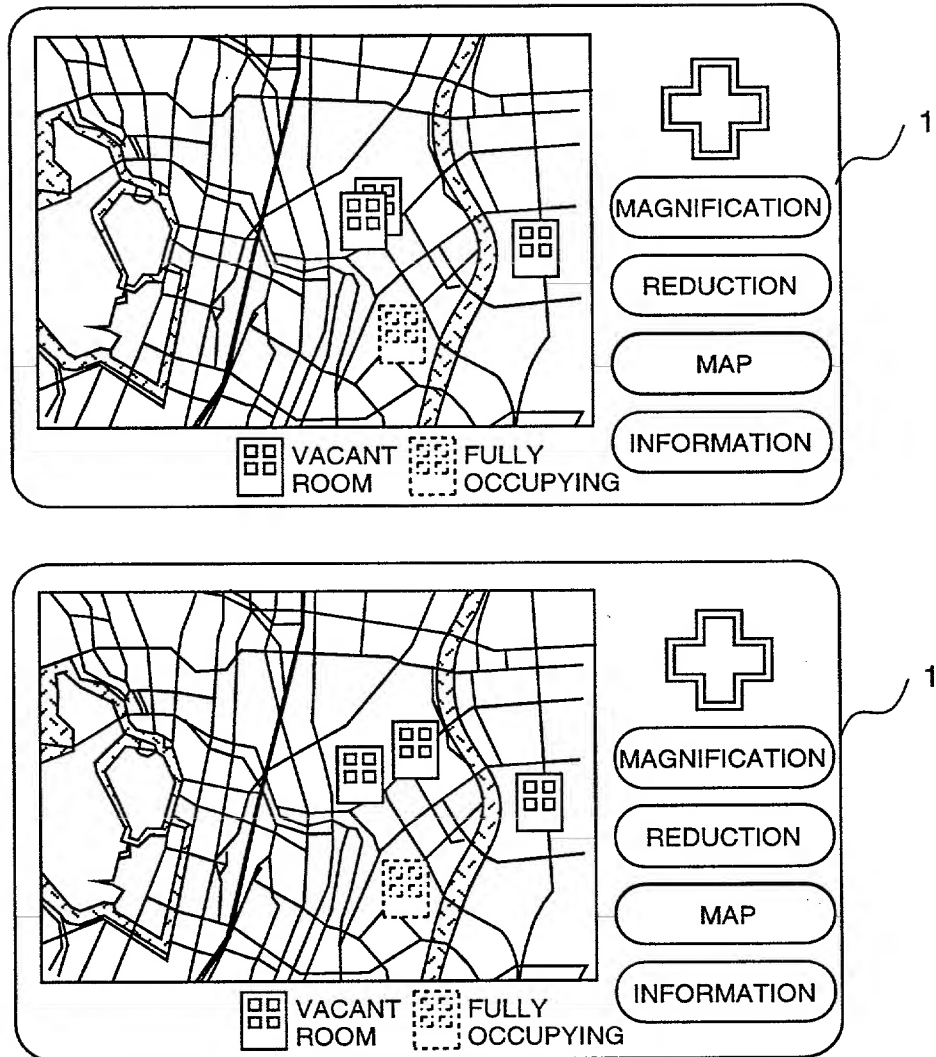


FIG.18

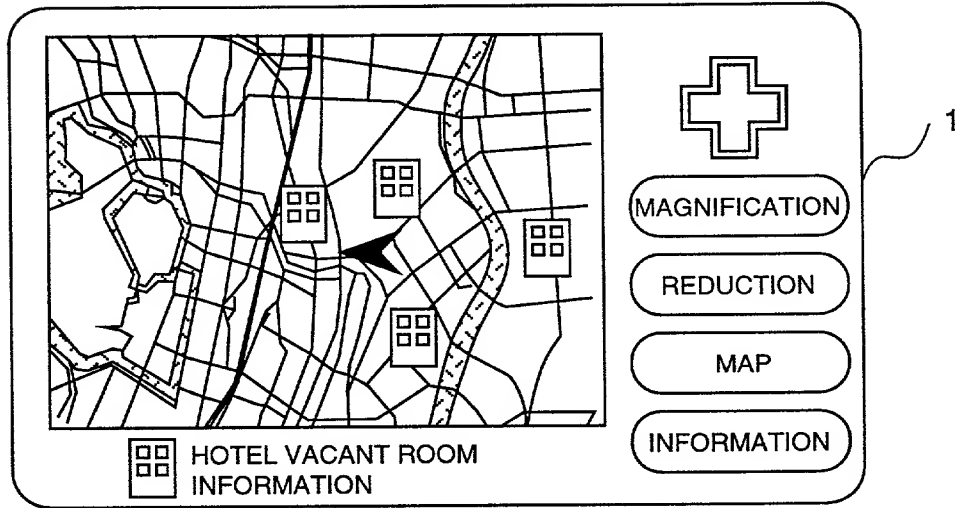


FIG.19

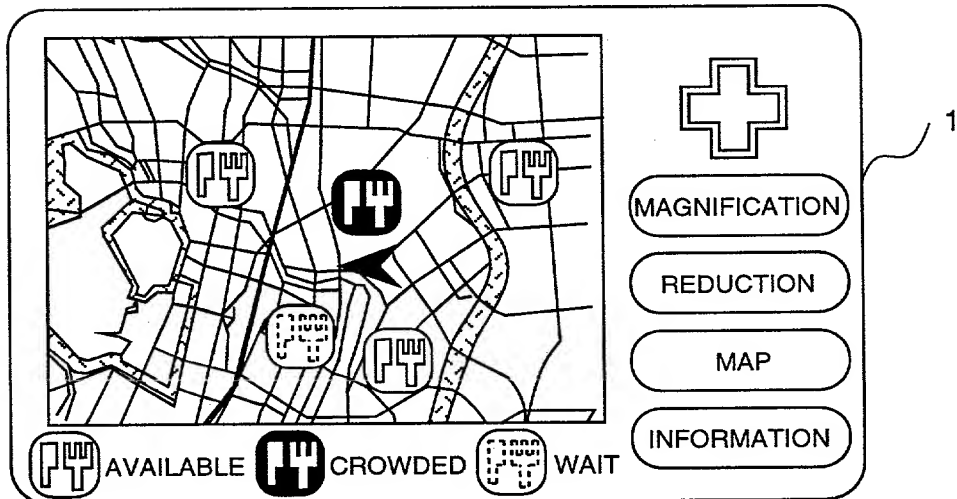


FIG.20

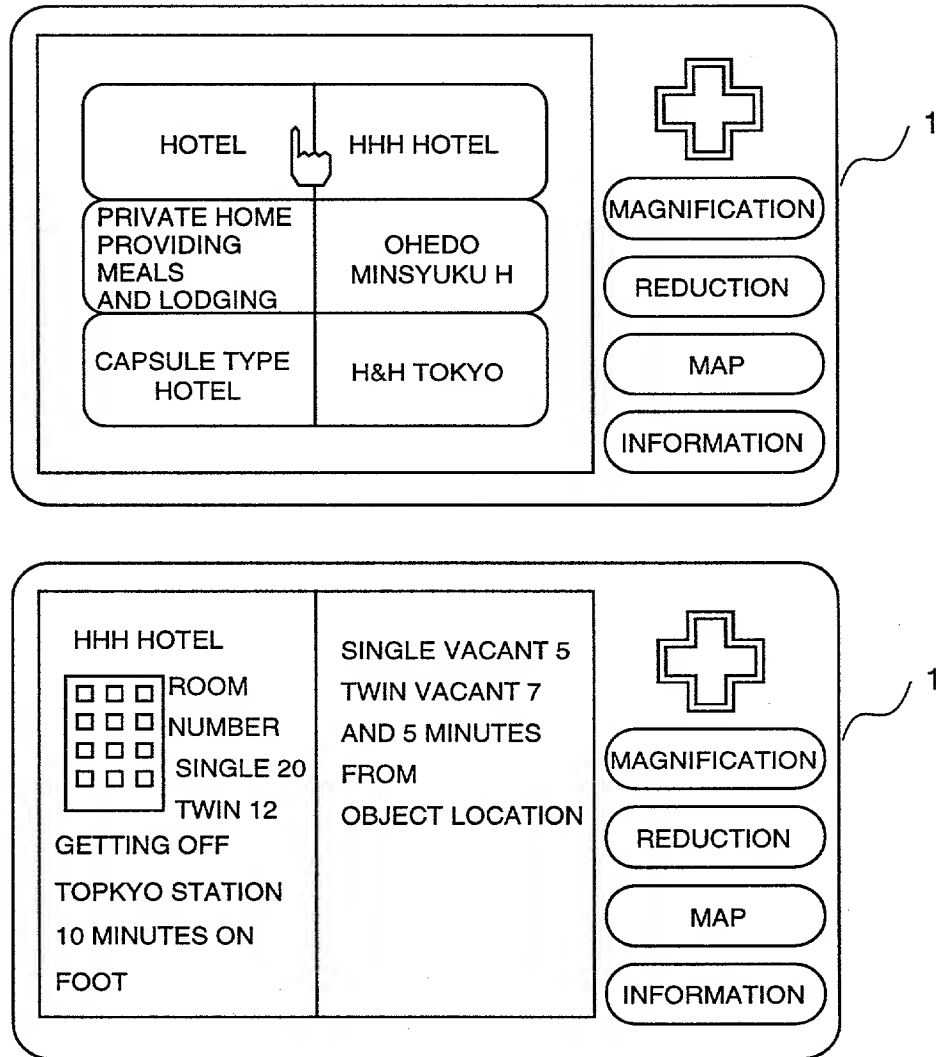


FIG.21

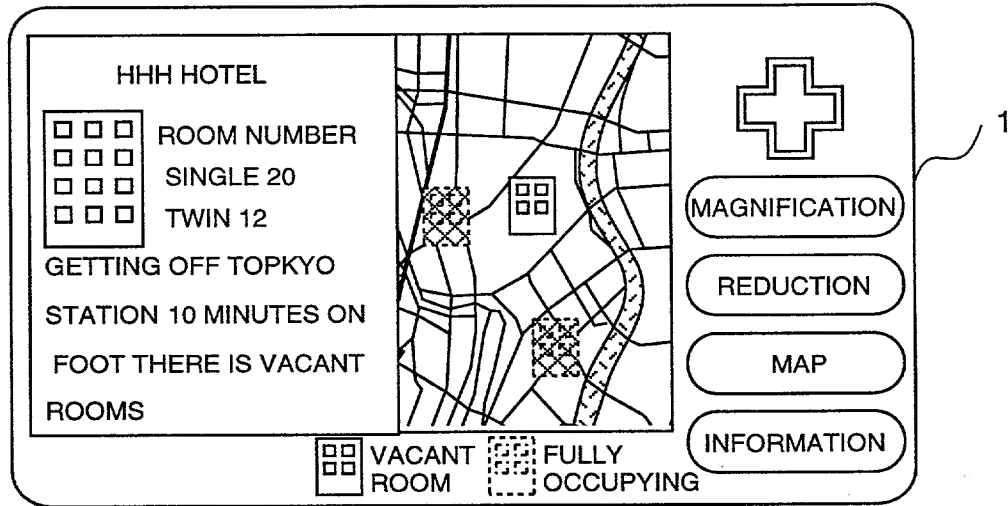


FIG.22

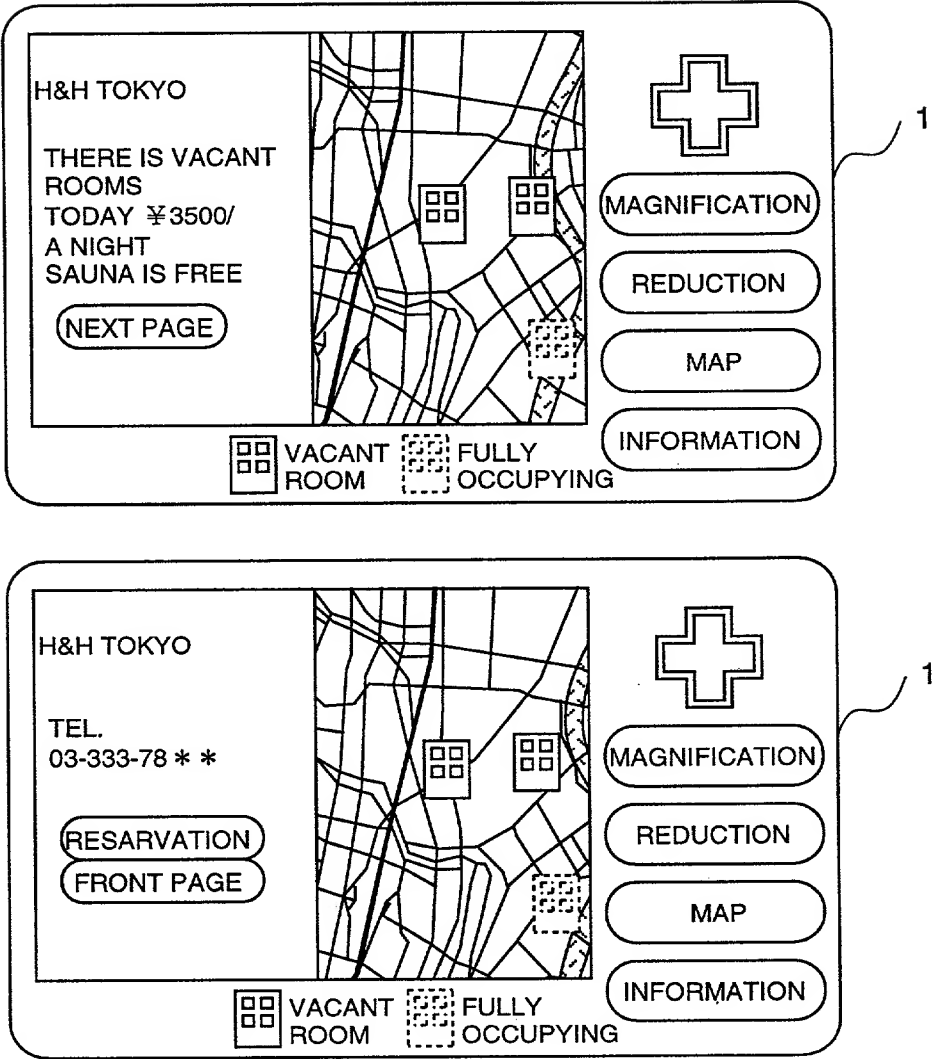
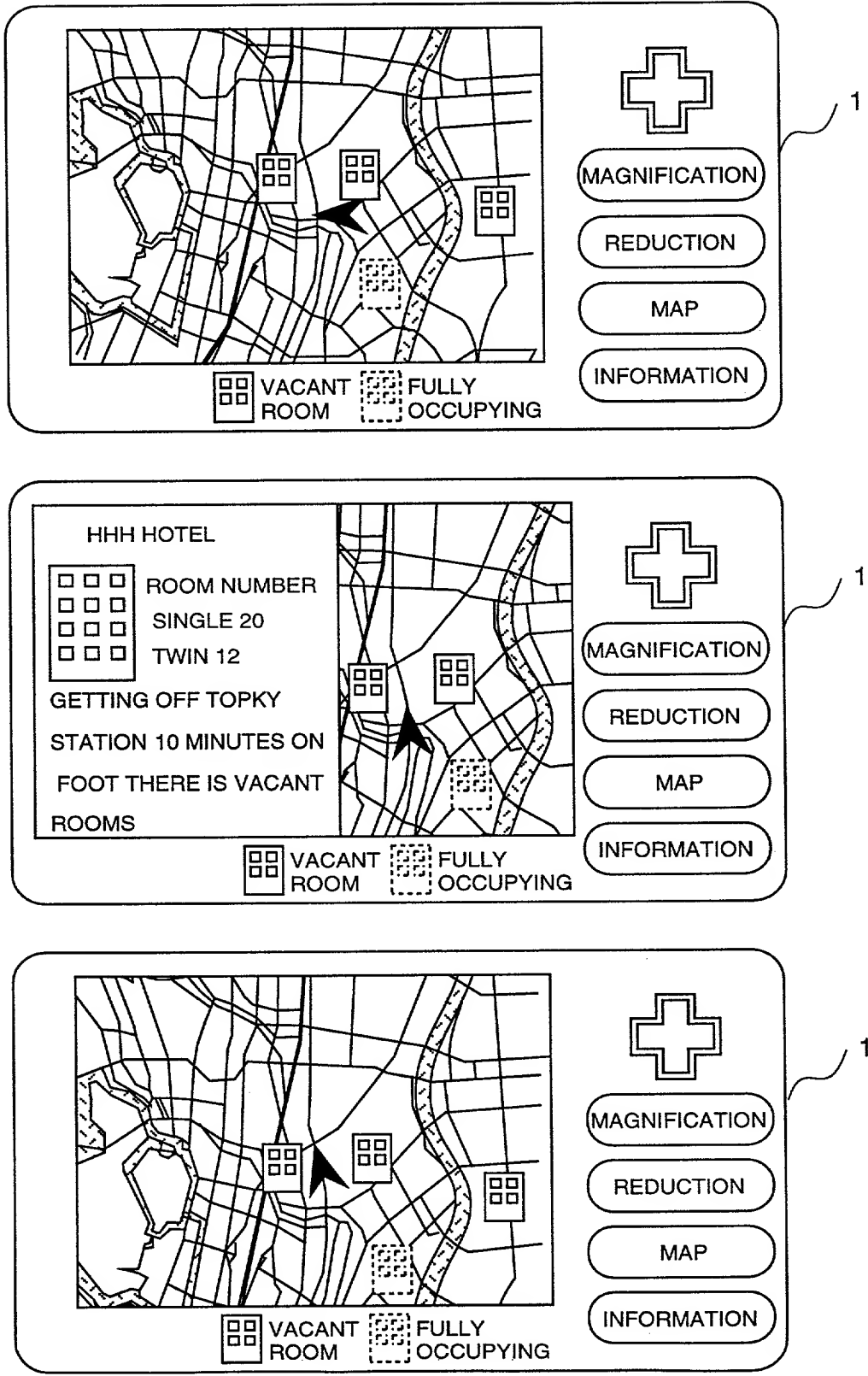


FIG. 23



DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name, I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

INFORMATION DISPLAY SYSTEM FOR DISPLAYING SPECIFIED LOCATION

WITH MAP THEREAROUND ON DISPLAY EQUIPMENT

the specification of which (check one)

☒

is attached hereto.

☐

was filed on _____

as Application Serial No. _____

and was amended on _____

(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, §1.56(a).

I, hereby claim foreign priority benefits under Title 35, United States Code, §119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)

Priority Claimed

<u>8-242904</u> (Number)	<u>Japan</u> (Country)	<u>13/09/1996</u> (Day/Month/Year Filed)	<input checked="" type="checkbox"/> Yes	<input type="checkbox"/> No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No
_____ (Number)	_____ (Country)	_____ (Day/Month/Year Filed)	<input type="checkbox"/> Yes	<input type="checkbox"/> No

I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status: patented, pending, abandoned)
_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status: patented, pending, abandoned)
_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status: patented, pending, abandoned)
_____ (Application Serial No.)	_____ (Filing Date)	_____ (Status: patented, pending, abandoned)

(Continued on Page 2)

I hereby appoint as principal attorneys; Donald R. Antonelli, Reg. No. 20,296; David T. Terry, Reg. No. 20,178; Melvin Kraus, Reg. No. 22,466; Stanley A. Wal, Reg. No. 26,432; William I. Solomon, Reg. No. 28,565; Gregory E. Montone, Reg. No. 28,141; Ronald J. Shore, Reg. No. 28,577; Donald E. Stout, Reg. No. 26,422; Alan E. Schiavelli, Reg. No. 32,087; James N. Dresser, Reg. No. 22,973 and Carl I. Brundidge, Reg. No. 29,621 to prosecute and transact all business connected with this application and any related United States application and international applications. Please direct all communications to the following address:

Antonelli, Terry, Stout & Kraus
Suite 1800
1300 North Seventeenth Street
Arlington, Virginia 22209
Telephone: (703) 312-6600
Fax: (703) 312-6666

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further, that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United State Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

	(Full Name)	(Signature)
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Post Office Address <u>192-72, Sumiyoshi-cho, Mito-shi, Ibaraki 310, Japan</u>		
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Post Office Address <u>19-4-303, Ishinazaka-cho 1-chome, Hitachi-shi, Ibaraki 319-12, Japan</u>		
Date _____	Inventor _____	
Residence _____	Citizenship _____	
Post Office Address _____		
Date _____	Inventor _____	
Residence _____	Citizenship _____	
Post Office Address _____		
Date _____	Inventor _____	
Residence _____	Citizenship _____	
Post Office Address _____		